

# BTEC Level 2 Technical Diploma in **BLACKSMITHING**



## Comparing unit content

**BTEC Level 2 Technical Diploma in Blacksmithing**  
**BTEC First in Blacksmithing and Metal Working (QCF – 2010)**

## Introduction to BTEC Level 2 Technical Diploma in Blacksmithing

This document maps the content of the new BTEC Level 2 Tech Diploma in Blacksmithing (RQF), shown in the left-hand column, against the content of the current BTEC First in Blacksmithing and Metal Working (QCF – 2010) in the right-hand column.

This mapping will help you transition from one specification to the other by highlighting where there are changes in content, particularly where there is new content which will need to be delivered to help your learners prepare for the new assessment.

**In order to make the table easy to use and to demonstrate new content we have used a ‘traffic lights’ colour scheme as follows:**

**GREEN** - covered. In this case the content in the Level 2 Technical is very close indeed to the existing BTEC First in Blacksmithing and Metal Working (QCF – 2010). In the right-hand column, the title of the relevant unit and learning outcome (LO) is identified.

**YELLOW** - partially covered. In this case the content is partially covered, perhaps in learning outcomes in more than one unit from the BTEC First in Blacksmithing and Metal Working (QCF – 2010). Where there is some additional knowledge, this is stated in the left-hand column under the heading **NEW CONTENT**

**RED** - not covered. In this case the content in the BTEC L2 Technical is new. It will appear in the left-hand column so you

## **Purpose of the qualification:**

This qualification, which is 360 GLH, is for you if you want to start a career in agriculture. It is designed for post-16 students and can be taken as part of a wider study programme. It is an ideal qualification if you are intending to progress directly to employment within agriculture, or to an agriculture apprenticeship.

This qualification has been developed in consultation with employers in the blacksmithing sector to ensure that you learn the skills and behaviours that will give you the best opportunity to be successful when applying for work.

There are six mandatory units that relate directly to the skills, knowledge and behaviours expected by employers in the blacksmithing sector.

The areas you will cover are:

- health and safety in blacksmithing
- metallurgy and heat treatment
- the forging process
- welding and thermal cutting processes
- technical and freehand techniques
- researching, designing and making blacksmith products.

You will be able to add one optional unit to the mandatory content, which cover areas such as:

- fabrication techniques
- forge work and construction techniques
- horse biology and handling.

You will also enhance your broader skills in literacy and numeracy, which will be invaluable in supporting progression in other areas. In addition, you will develop transferable technical and practical skills in communication (working with colleagues, customers and clients), and research and project work, giving you an opportunity to demonstrate your reflective practice by suggesting alternative approaches to a problem.

**Pearson BTEC Level 2 Technical Diploma in Blacksmithing**

Unit number	Unit title	GLH	Type	How assessed
1	Health and Safety in Blacksmithing	30	Mandatory	Internal
2	Metallurgy and Heat Treatment	45	Mandatory	Internal
3	Forging Processes	60	Mandatory	Internal
4	Welding and Thermal Cutting Processes	60	Mandatory	Internal
5	Freehand and Technical Drawing	30	Mandatory	Internal
6	Fabrication Techniques	60	Mandatory	Internal
7	Forge Work Construction Techniques	60	Mandatory	Internal
8	Horse Biology and Handling	60	Mandatory	Internal
9	Research, Design and Make Blacksmith Products	90	Mandatory	Internal Synoptic

**Covered**
**Partially covered**
**Not covered**



BTEC Level 2 Technical Diploma in Blacksmithing	BTEC First in Blacksmithing and Metal Working (QCF – 2010)
<b>Unit 1 –: Health and Safety in Blacksmithing</b>	
<b>Learning Aims</b>	
<b>A</b> Understand roles and responsibilities in the blacksmith's workplace	
<b>B</b> Explore the risks and hazards that occur when carrying out blacksmithing practices	
<b>C</b> Demonstrate responsible environmental working practices	
<b>Unit Content</b>	
<b>Knowledge and sector skills</b>	
<b>Learning aim A</b> Understand roles and responsibilities in the blacksmith's workplace	
<b>A1</b> Roles and responsibilities	<p><b>Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working</b></p> <p><b>LO1</b> Know forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO2</b> Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO3</b> Be able to prepare and maintain common forge tooling</p> <p><b>LO4</b> Know safe working in the workshop forge.</p> <p><b>Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working</b></p> <p><b>LO1</b> Know common forge work construction tools and techniques</p> <p><b>LO2</b> Be able to use forge work construction techniques</p> <p><b>LO3</b> Be able to produce finished elements/motifs</p> <p><b>LO4</b> Understand safe working when using forge</p>

Covered

Partially covered

Not covered

	<p>work construction techniques</p> <p><b>Unit 16: Introduction to Land based Workshop Practice</b>  <b>LO1</b> Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations  <b>LO2</b> Be able to safely use basic welding and cutting equipment  <b>LO3</b> Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations  <b>LO4</b> Understand land-based workshop health and safety requirements.</p>
<b>A2</b> Health and safety legislation and relevant regulations	<p><b>Unit 3: 2D Visual Communication</b>  <b>LO1</b> Be able to use 2D mark-making techniques</p> <p><b>Unit 4: 3D Visual Communication</b>  <b>LO1</b> Be able to use 3D making techniques</p> <p><b>Unit 8: Working with 3D Design Briefs</b>  <b>LO1</b> Be able to use 3D design materials, techniques and processes</p> <p><b>Unit 9: Working with 3D Design Crafts Briefs</b>  <b>LO3</b> Be able to use 3D design crafts materials, techniques and processes</p> <p><b>Unit 10: Application of Welding Processes</b>  <b>LO1</b> Know about health and safety legislation and safe working practices when welding</p> <p><b>Unit 11: Fabrication Techniques and Sheet Metal Work</b>  <b>LO1</b> Know the safe working practices used in a fabrication workshop and relevant health and safety legislation</p> <p><b>Unit 13: Undertake Horse Handling</b>  <b>LO1</b> Be able to handle and restrain horses using specified methods</p> <p><b>Unit 16: Introduction to Land based Workshop Practice</b>  <b>LO4</b> Understand land-based workshop health and safety requirements</p>

**Learning aim B** Explore the risks and hazards that occur when carrying out blacksmithing practices

**B1 1** Identify hazards and risks in the blacksmith's workplace

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge.

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 16: Introduction to Land based Workshop Practice**

**LO1** Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations

**LO2** Be able to safely use basic welding and cutting equipment

**LO3** Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations

**LO4** Understand land-based workshop health and safety requirements.

**B2** Identify safety control measures and incident reporting

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge.

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 16: Introduction to Land based Workshop Practice**

**LO1** Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations

**LO2** Be able to safely use basic welding and cutting equipment

**LO3** Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations

**LO4** Understand land-based workshop health and safety requirements.

**Learning aim C** Demonstrate safe working practices in the workplace

**1** Carry out a risk assessment

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge.

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

Covered

Partially covered

Not covered



	<p><b>LO2</b> Be able to use forge work construction techniques</p> <p><b>LO3</b> Be able to produce finished elements/motifs</p> <p><b>LO4</b> Understand safe working when using forge work construction techniques</p> <p><b>Unit 16: Introduction to Land based Workshop Practice</b></p> <p><b>LO1</b> Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations</p> <p><b>LO2</b> Be able to safely use basic welding and cutting equipment</p> <p><b>LO3</b> Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations</p> <p><b>LO4</b> Understand land-based workshop health and safety requirements.</p>
<b>C2</b> Working safely in work areas	<p><b>Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working</b></p> <p><b>LO1</b> Know forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO2</b> Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO3</b> Be able to prepare and maintain common forge tooling</p> <p><b>LO4</b> Know safe working in the workshop forge.</p> <p><b>Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working</b></p> <p><b>LO1</b> Know common forge work construction tools and techniques</p> <p><b>LO2</b> Be able to use forge work construction techniques</p> <p><b>LO3</b> Be able to produce finished elements/motifs</p> <p><b>LO4</b> Understand safe working when using forge work construction techniques</p> <p><b>Unit 16: Introduction to Land based Workshop Practice</b></p> <p><b>LO1</b> Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations</p> <p><b>LO2</b> Be able to safely use basic welding and cutting equipment</p> <p><b>LO3</b> Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations</p> <p><b>LO4</b> Understand land-based workshop health and safety requirements.</p>

**Unit 2 – Metallurgy and Heat Treatment**
**Learning Aims**

**A** Understand iron and steel metallurgy for effective forging process and heat treatments

**B** Understand heat treatments for iron and plain carbon steels

**C** Produce forge tools with appropriate heat treatment

**Unit Content**
**Knowledge and sector skills**

**Learning aim A** Understand iron and steel metallurgy for effective forging process and heat treatments

**A1 Properties of materials**
**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 10: Application of Welding Processes**

**LO3** Be able to produce joints to welding standards

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO2** Be able to measure and mark out materials for fabricated structures

**A2 Plain carbon steel phase diagram****Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work.

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work.

**Unit 12: Working with Blacksmithing Specifications and Calculations**

**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**B Understand heat treatments for iron and plain carbon steels**

**B1** Test methods and applications for iron and plain carbon steel

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**B2** Effects of work, heating, cooling, carbon and oxygen on iron and steel

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

	<b>Unit 10: Application of Welding Processes</b> <b>LO3</b> Be able to produce joints to welding standards
<b>B3</b> Understand heat treatments of plain carbon steel and their purpose	<b>Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working</b> <b>LO1</b> Know forging, forming, cutting and joining techniques used in the workshop forge <b>LO2</b> Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge <b>LO3</b> Be able to prepare and maintain common forge tooling <b>LO4</b> Know safe working in the workshop forge  <b>Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working</b> <b>LO1</b> Know common forge work construction tools and techniques <b>LO2</b> Be able to use forge work construction techniques <b>LO3</b> Be able to produce finished elements/motifs <b>LO4</b> Understand safe working when using forge work construction techniques  <b>Unit 10: Application of Welding Processes</b> <b>LO3</b> Be able to produce joints to welding standards  <b>Unit 11: Fabrication Techniques and Sheet Metal Work</b> <b>LO1</b> Know the safe working practices used in a fabrication workshop and relevant health and safety legislation <b>LO2</b> Be able to measure and mark out materials for fabricated structures <b>LO3</b> Be able to cut and form materials safely in a sheet metal fabrication environment <b>LO4</b> Be able to join and accurately assemble fabricated structures.



**C Produce forge tools with appropriate heat treatment****C1 Understand tool design requirements****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working****LO1** Know forging, forming, cutting and joining techniques used in the workshop forge**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge**LO3** Be able to prepare and maintain common forge tooling**LO4** Know safe working in the workshop forge**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working****LO1** Know common forge work construction tools and techniques**LO2** Be able to use forge work construction techniques**LO3** Be able to produce finished elements/motifs**LO4** Understand safe working when using forge work construction techniques**C2 Tools and equipment for making blacksmithing tools****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working****LO1** Know forging, forming, cutting and joining techniques used in the workshop forge**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge**LO3** Be able to prepare and maintain common forge tooling**LO4** Know safe working in the workshop forge**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working****LO1** Know common forge work construction tools and techniques**LO2** Be able to use forge work construction techniques**LO3** Be able to produce finished elements/motifs**LO4** Understand safe working when using forge work construction techniques

**C3** Safely produce tools by forging with appropriate heat treatment

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

### Unit 3 – Forging Processes

#### Learning Aims

**A** Understand heating methods and fire control during forging processes

**B** Carry out hot forging and forming techniques

**C** Carry out hot cutting and joining techniques

#### Unit Content

#### Knowledge and sector skills

**Learning aim A** Understand heating methods and fire control during forging processes

**A1** Fuel types and their properties

#### **Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

#### **Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**A2 Forge hearth, furnace and gas torch design****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working****LO1** Know forging, forming, cutting and joining techniques used in the workshop forge**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge**LO3** Be able to prepare and maintain common forge tooling**LO4** Know safe working in the workshop forge**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working****LO1** Know common forge work construction tools and techniques**LO2** Be able to use forge work construction techniques**LO3** Be able to produce finished elements/motifs**LO4** Understand safe working when using forge work construction techniques**A3 Forging heats and their uses****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working****LO1** Know forging, forming, cutting and joining techniques used in the workshop forge**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge**LO3** Be able to prepare and maintain common forge tooling**LO4** Know safe working in the workshop forge**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working****LO1** Know common forge work construction tools and techniques**LO2** Be able to use forge work construction techniques**LO3** Be able to produce finished elements/motifs**LO4** Understand safe working when using forge work construction techniques

**Learning aim B** Carry out hot forging and forming techniques

**B1** Forging and forming tools and equipment

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**B2** Forging and forming techniques

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques



**Learning aim C** Carry out hot cutting and joining techniques

**C1 Tools and equipment**
**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**Unit 9: Working with 3D Design Crafts Briefs**

**LO3** Be able to use 3D design crafts materials, techniques and processes

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**C2 Cutting and joining techniques****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**Unit 9: Working with 3D Design Crafts Briefs**

**LO3** Be able to use 3D design crafts materials, techniques and processes

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**Unit 4 – Welding and Thermal Cutting Processes**
**Learning Aims**

**A** Understand welding and thermal cutting processes with regard to methods, equipment and materials in the metalworking industry

**B** Carry out a selected thermal cutting process for shaping, cutting and stock removal of metals

**C** Carry out a selected welding process for joining metals in the metalworking industry

**Unit Content**
**Knowledge and sector skills**

**A** Understand welding and thermal cutting processes with regard to methods, equipment and materials in the metalworking industry

**A1 Thermal cutting processes**
**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment

**A2 Welding processes**
**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

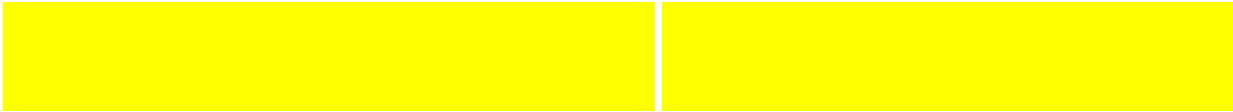
**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment



**B** Carry out a selected thermal cutting process for shaping, cutting and stock removal of metals

**B1** Preparation for thermal cutting process

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment

**B2** Thermal cutting process

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment



Carry out a selected welding process for joining metals in the metalworking industry

**C1** Preparation for welding process

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment

**C2** Welding process

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints

**Unit 16: Introduction to Land based Workshop Practice**

**LO2** Be able to safely use basic welding and cutting equipment

**Unit 5 – Freehand and Technical Drawing**

**Learning Aims**

**A** Understand the purpose of freehand and technical drawing techniques

**B** Carry out freehand drawing skills used for designing and presentation of ideas

**C** Carry out technical drawing skills used for blacksmithing, engineering and fabrication constructions

Covered

Partially covered

Not covered

**Unit Content****Knowledge and sector skills****Learning aim A** Understand the purpose of freehand and technical drawing techniques**A1** Freehand drawing**Unit 3: 2D Visual Communication****LO1** Be able to use 2D mark-making techniques**LO2** Be able to communicate design ideas using 2D visual communication techniques**LO3** Be able to use formal elements in 2D visual communication.**Unit 4: 3D Visual Communication****LO1** Be able to use 3D making techniques**LO2** Be able to communicate design ideas using 3D visual communication techniques**LO3** Be able to use formal elements in 3D visual communication.**Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations

**A2 Technical drawing****Unit 3: 2D Visual Communication****LO1** Be able to use 2D mark-making techniques**LO2** Be able to communicate design ideas using 2D visual communication techniques**LO3** Be able to use formal elements in 2D visual communication.**Unit 4: 3D Visual Communication****LO1** Be able to use 3D making techniques**LO2** Be able to communicate design ideas using 3D visual communication techniques**LO3** Be able to use formal elements in 3D visual communication.**Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations

**Learning aim B** Carry out freehand drawing skills used for designing and presentation of ideas

**B1 Materials and equipment**

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**LO2** Be able to communicate design ideas using 2D visual communication techniques

**LO3** Be able to use formal elements in 2D visual communication.

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**LO2** Be able to communicate design ideas using 3D visual communication techniques

**LO3** Be able to use formal elements in 3D visual communication.

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work

**Unit 12: Working with Blacksmithing Specifications and Calculations**

**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**B2 Freehand drawing skills and techniques****Unit 3: 2D Visual Communication****LO1** Be able to use 2D mark-making techniques**LO2** Be able to communicate design ideas using 2D visual communication techniques**LO3** Be able to use formal elements in 2D visual communication.**Unit 4: 3D Visual Communication****LO1** Be able to use 3D making techniques**LO2** Be able to communicate design ideas using 3D visual communication techniques**LO3** Be able to use formal elements in 3D visual communication.**Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations



**Learning aim C** Carry out technical drawing skills used for blacksmithing, engineering and fabrication constructions

**C1 Materials and equipment**

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**LO2** Be able to communicate design ideas using 2D visual communication techniques

**LO3** Be able to use formal elements in 2D visual communication.

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**LO2** Be able to communicate design ideas using 3D visual communication techniques

**LO3** Be able to use formal elements in 3D visual communication.

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work

**Unit 12: Working with Blacksmithing Specifications and Calculations**

**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**C2 Technical drawing skills and techniques**
**Unit 3: 2D Visual Communication**
**LO1** Be able to use 2D mark-making techniques

**LO2** Be able to communicate design ideas using 2D visual communication techniques

**LO3** Be able to use formal elements in 2D visual communication.

**Unit 4: 3D Visual Communication**
**LO1** Be able to use 3D making techniques

**LO2** Be able to communicate design ideas using 3D visual communication techniques

**LO3** Be able to use formal elements in 3D visual communication.

**Unit 8: Working with 3D Design Briefs**
**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**
**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work

**Unit 12: Working with Blacksmithing Specifications and Calculations**
**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**Unit 11: Fabrication Techniques and Sheet Metal Work**
**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**Unit 6 – Fabrication Techniques**
**Learning Aims**

**A** Understand fabrication materials and their properties

**B** Plan and prepare materials for metalwork fabrication construction

**C** Carry out fabrication techniques for construction

**Unit Content**
**Knowledge and sector skills**

**Learning aim A** Understand fabrication materials and their properties

**A1** Material types, their forms of supply and effect on the overall structural properties

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**A2 Construction types and requirements****Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**Learning aim B** Plan and prepare materials for metalwork fabrication construction**B1** Preparing materials and planning for fabrication construction**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**B2** Cut materials ready for fabrication**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**Learning aim C** Carry out fabrication techniques for construction

**C1 Tools and machinery**
**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**C2 Fabrication and construction techniques**
**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**Unit 7 –: Forge Work Construction Techniques**
**Learning Aims**

**A** Understand the purpose of forge work construction techniques

**B** Carry out joining techniques for forge work constructions

**C** Carry out framework construction

**Unit Content**
**Knowledge and sector skills**

**Learning aim A** Understand the purpose of forge work construction techniques

**A1** Joining techniques

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**A2 Framework constructions****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**A3 Faults and their control****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Learning aim B** Carry out joining techniques for forge work constructions

**B1** Joining tools and equipment

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**B2** Produce blacksmith's joints

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques



**Learning aim C** Carry out framework construction

**C1** Framework construction tools and equipment

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**C2** Working to specification

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Covered**
**Partially covered**
**Not covered**

**C3 Framework construction techniques****Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working****LO1** Know forging, forming, cutting and joining techniques used in the workshop forge**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge**LO3** Be able to prepare and maintain common forge tooling**LO4** Know safe working in the workshop forge**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working****LO1** Know common forge work construction tools and techniques**LO2** Be able to use forge work construction techniques**LO3** Be able to produce finished elements/motifs**LO4** Understand safe working when using forge work construction techniques

**C4** Safe working practices when constructing basic frameworks

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 16: Introduction to Land based Workshop Practice**

**LO1** Be able to safely use commonly found hand and power tools for the maintenance and repair of land-based machinery and installations

**LO2** Be able to safely use basic welding and cutting equipment

**LO3** Be able to safely use basic maintenance and/or repair techniques on land-based machinery and installations

**LO4** Understand land-based workshop health and safety requirements.

**Unit 8 – Horse Biology and Handling**
**Learning Aims**
**A** Understand the structure and function of horse movement

**B** Understand horse systems

**C** Demonstrate safe horse handling and restraint techniques

**Unit Content**
**Knowledge and sector skills**
**Learning aim A** Understand the structure and function of horse movement

**A1** Skeleton, joints and muscles

**Unit 15: Understand the Principles of Horse Biology**
**LO1** Know the structure and function of the systems associated with support and movement

**LO2** Know the structure and function of the cardiovascular system in the horse

**A2** Structures of the lower leg**Unit 15: Understand the Principles of Horse Biology****LO1** Know the structure and function of the systems associated with support and movement**LO2** Know the structure and function of the cardiovascular system in the horse**Learning aim B** Understand horse systems**B1** Cardiovascular system**Unit 15: Understand the Principles of Horse Biology****LO2** Know the structure and function of the cardiovascular system in the horse**B2** Respiratory system**Unit 15: Understand the Principles of Horse Biology****LO3** Know the structure and function of the respiratory system in the horse

**B3 Digestive system****Unit 15: Understand the Principles of Horse Biology**

**LO4** Know the structure and function of the digestive system in the horse.

**Learning aim C** Demonstrate safe horse handling and restraint techniques**C1** Preparation for horse handling and restraint**Unit 13: Undertake Horse Handling**

**LO1** Be able to handle and restrain horses using specified methods

**LO2** Know how to handle and restrain horses.

**Unit 14: Introduction to the Principles of Horse Behaviour**

**LO1** Understand the roles of horses in society

**LO2** Know the natural lifestyle of the horse

**LO3** Understand the impact of domestication on the horse

**LO4** Be able to monitor and report on horse behaviour.

**C2** Use horse handling and restraint methods**Unit 13: Undertake Horse Handling**

**LO1** Be able to handle and restrain horses using specified methods

**LO2** Know how to handle and restrain horses.

**Unit 14: Introduction to the Principles of Horse Behaviour**

**LO1** Understand the roles of horses in society

**LO2** Know the natural lifestyle of the horse

**LO3** Understand the impact of domestication on the horse

**LO4** Be able to monitor and report on horse behaviour.

**C3** Foot-care report**Unit 13: Undertake Horse Handling**

**LO1** Be able to handle and restrain horses using specified methods

**LO2** Know how to handle and restrain horses.

**Unit 14: Introduction to the Principles of Horse Behaviour**

**LO1** Understand the roles of horses in society

**LO2** Know the natural lifestyle of the horse

**LO3** Understand the impact of domestication on the horse

**LO4** Be able to monitor and report on horse behaviour.

**Unit 9 – Research, Design and Make Blacksmith Products**
**Learning Aims**
**A** Investigate design and development processes in blacksmithing

**B** Create a blacksmithing product

**C** Review the success of design processes and outcomes

**Unit Content**
**Knowledge and sector skills**
**Learning aim A** Investigate design and development processes in blacksmithing

**A1** Establishing context

**Unit 5: Using Ideas to Explore, Develop and Produce Art and Design**
**LO1** Be able to research and record visual and other information from primary and secondary sources in response to the brief

**LO2** Be able to develop ideas that meet the requirements of the brief, through the use of specialist materials, equipment and techniques

**LO3** Be able to present and communicate developmental work and final outcomes

**LO4** Know the strengths and weaknesses of developmental work

**Unit 6: Contextual References in Art and Design**
**LO1** Know the influences of historical and contemporary art and design developments

**LO2** Be able to use historical and contemporary references to support research and development of own response

**LO3** Be able to present information about the work studied in an appropriate format



**A2 Research methods****Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work

**Unit 12: Working with Blacksmithing Specifications and Calculations**

**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

**Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints.

**A3 Design aspects, methods and ideas****Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations**Unit 11: Fabrication Techniques and Sheet Metal Work****LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation**LO2** Be able to measure and mark out materials for fabricated structures**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment**LO4** Be able to join and accurately assemble fabricated structures.**Unit 10: Application of Welding Processes****LO1** Know about health and safety legislation and safe working practices when welding**LO2** Be able to prepare for work in a welding environment**LO3** Be able to produce joints to welding standards**LO4** Be able to perform destructive and non-destructive tests on welded joints.

**A4** Creating a design specification**Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations**Unit 11: Fabrication Techniques and Sheet Metal Work****LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation**LO2** Be able to measure and mark out materials for fabricated structures**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment**LO4** Be able to join and accurately assemble fabricated structures.**Unit 10: Application of Welding Processes****LO1** Know about health and safety legislation and safe working practices when welding**LO2** Be able to prepare for work in a welding environment**LO3** Be able to produce joints to welding standards**LO4** Be able to perform destructive and non-destructive tests on welded joints.

**A5** Use of design conclusions**Unit 8: Working with 3D Design Briefs****LO1** Be able to use 3D design materials, techniques and processes**LO2** Be able to develop ideas to meet 3D design briefs**LO3** Understand the successful characteristics and quality of 3D design work**Unit 9: Working with 3D Design Crafts Briefs****LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs**LO3** Be able to use 3D design crafts materials, techniques and processes**LO4** Understand the successful characteristics and quality of 3D design crafts work**Unit 12: Working with Blacksmithing Specifications and Calculations****LO1** Know the uses of blacksmithing specifications and calculations**LO2** Be able to work with blacksmithing specifications and calculations**Unit 11: Fabrication Techniques and Sheet Metal Work****LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation**LO2** Be able to measure and mark out materials for fabricated structures**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment**LO4** Be able to join and accurately assemble fabricated structures.**Unit 10: Application of Welding Processes****LO1** Know about health and safety legislation and safe working practices when welding**LO2** Be able to prepare for work in a welding environment**LO3** Be able to produce joints to welding standards**LO4** Be able to perform destructive and non-destructive tests on welded joints.

**Learning aim B** Create a blacksmithing product

**B1** Blacksmithing processes and construction techniques

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge.

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**LO2** Be able to communicate design ideas using 2D visual communication techniques

**LO3** Be able to use formal elements in 2D visual communication.

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**LO2** Be able to communicate design ideas using 3D visual communication techniques

**LO3** Be able to use formal elements in 3D visual communication.

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

	<p><b>LO2</b> Be able to explore and develop ideas to meet 3D design crafts briefs</p> <p><b>LO3</b> Be able to use 3D design crafts materials, techniques and processes</p> <p><b>LO4</b> Understand the successful characteristics and quality of 3D design crafts work</p> <p><b>Unit 12: Working with Blacksmithing Specifications and Calculations</b></p> <p><b>LO1</b> Know the uses of blacksmithing specifications and calculations</p> <p><b>LO2</b> Be able to work with blacksmithing specifications and calculations</p> <p><b>Unit 11: Fabrication Techniques and Sheet Metal Work</b></p> <p><b>LO1</b> Know the safe working practices used in a fabrication workshop and relevant health and safety legislation</p> <p><b>LO2</b> Be able to measure and mark out materials for fabricated structures</p> <p><b>LO3</b> Be able to cut and form materials safely in a sheet metal fabrication environment</p> <p><b>LO4</b> Be able to join and accurately assemble fabricated structures.</p> <p><b>Unit 10: Application of Welding Processes</b></p> <p><b>LO1</b> Know about health and safety legislation and safe working practices when welding</p> <p><b>LO2</b> Be able to prepare for work in a welding environment</p> <p><b>LO3</b> Be able to produce joints to welding standards</p> <p><b>LO4</b> Be able to perform destructive and non-destructive tests on welded joints.</p>
<p><b>B2 Quality</b></p>	<p><b>Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working</b></p> <p><b>LO1</b> Know forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO2</b> Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO3</b> Be able to prepare and maintain common forge tooling</p> <p><b>LO4</b> Know safe working in the workshop forge.</p> <p><b>Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe</b></p>

**Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

**Unit 3: 2D Visual Communication**

**LO1** Be able to use 2D mark-making techniques

**LO2** Be able to communicate design ideas using 2D visual communication techniques

**LO3** Be able to use formal elements in 2D visual communication.

**Unit 4: 3D Visual Communication**

**LO1** Be able to use 3D making techniques

**LO2** Be able to communicate design ideas using 3D visual communication techniques

**LO3** Be able to use formal elements in 3D visual communication.

**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

**LO3** Understand the successful characteristics and quality of 3D design work

**Unit 9: Working with 3D Design Crafts Briefs**

**LO1** Be able to research and record primary and secondary sources in response to 3D design crafts briefs

**LO2** Be able to explore and develop ideas to meet 3D design crafts briefs

**LO3** Be able to use 3D design crafts materials, techniques and processes

**LO4** Understand the successful characteristics and quality of 3D design crafts work

**Unit 12: Working with Blacksmithing Specifications and Calculations**

**LO1** Know the uses of blacksmithing specifications and calculations

**LO2** Be able to work with blacksmithing specifications and calculations

**Unit 11: Fabrication Techniques and Sheet Metal Work**

**LO1** Know the safe working practices used in a fabrication workshop and relevant health and safety legislation

**LO2** Be able to measure and mark out materials for fabricated structures

**LO3** Be able to cut and form materials safely in a sheet metal fabrication environment

**LO4** Be able to join and accurately assemble fabricated structures.

#### **Unit 10: Application of Welding Processes**

**LO1** Know about health and safety legislation and safe working practices when welding

**LO2** Be able to prepare for work in a welding environment

**LO3** Be able to produce joints to welding standards

**LO4** Be able to perform destructive and non-destructive tests on welded joints.



**Learning aim C** Review the success of design processes and outcomes

**C1** Review product design processes

**Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working**

**LO1** Know forging, forming, cutting and joining techniques used in the workshop forge

**LO2** Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge

**LO3** Be able to prepare and maintain common forge tooling

**LO4** Know safe working in the workshop forge.

**Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working**

**LO1** Know common forge work construction tools and techniques

**LO2** Be able to use forge work construction techniques

**LO3** Be able to produce finished elements/motifs

**LO4** Understand safe working when using forge work construction techniques

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**Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

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<p><b>C2</b> Review own performance</p>	<p><b>Unit 1: Introduction to Forge work Preparation, Processes, Techniques and Safe Working</b></p> <p><b>LO1</b> Know forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO2</b> Be able to demonstrate basic forging, forming, cutting and joining techniques used in the workshop forge</p> <p><b>LO3</b> Be able to prepare and maintain common forge tooling</p> <p><b>LO4</b> Know safe working in the workshop forge.</p> <p><b>Unit 2: Introduction to Forge work Construction Tools, Techniques and Safe Working</b></p> <p><b>LO1</b> Know common forge work construction</p>

tools and techniques

**LO2** Be able to use forge work construction techniques

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### **Unit 8: Working with 3D Design Briefs**

**LO1** Be able to use 3D design materials, techniques and processes

**LO2** Be able to develop ideas to meet 3D design briefs

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### **Unit 9: Working with 3D Design Crafts Briefs**

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